

## CLAIMS

1-11. (previously canceled)

12. (currently amended) Software stored in or on a computer-readable medium for causing a software-controlled processing device coupled to first and second magnetic [bearing] bearings supporting a rotor to control positioning of the rotor in the first and second magnetic bearings, the rotor having a longitudinal axis and the first and second magnetic bearings defining a principal axis therebetween, each of the first and second magnetic bearings having at least four magnetic poles with respective magnet coils associated therewith, a the voltage and/or current flow through the magnet coils generating magnetic field force vectors to support the rotor for rotation relative to the first and second magnetic bearings, the force vectors under the control of the processor to selectively position the longitudinal axis relative to the principal axis, the software causing the ~~processor~~ processing device to perform the function of:

controlling the force vectors to align the rotor in the first and second magnetic bearings so that the longitudinal axis thereof and the principal axis defined between the first and second magnetic bearings are not axially coincident with one another; and

providing a selected waveform to be impressed on the magnetic field of the first and second magnetic bearings to excite the rotor in response to the selected waveform, the waveform impressed on the rotor at a selected angle relative to a fixed reference coordinate system and remaining stationary in that coordinate system during periods of time when the rotor is in motion.

13. (original) The software of claim 12, wherein the longitudinal axis is off-set from the principal axis.

14. (original) The software of claim 12, wherein the longitudinal axis is aligned non-parallel to the principal axis.

15. (original) The software of claim 12, wherein the longitudinal axis is aligned non-parallel to the principal axis and defines a pivot point intermediate the ends of the rotor.

16. (currently amended) The software of claim ~~[[44]]~~ 15, wherein the position of the pivot point along the longitudinal axis is determined as a function of the ratio of the force vectors applied by the first magnetic bearing and the second magnetic bearing.

17-21. (canceled)

22. (currently amended) The software of claim ~~[[46]]~~ 12, wherein the waveform is selected from the group comprising sine waveform, sine squared waveform, cosine waveform, cosine squared waveform, random waveform, square waveform, squared pulse waveform, triangular waveform, single square waveform, single triangular waveform, sawtooth waveform.

23-28. (previously canceled)

29. (new) Software stored in or on a computer-readable medium for causing a software-controlled processing device coupled to first and second magnetic bearings supporting a rotor to control positioning of the rotor in the first and second magnetic bearings, the rotor having a longitudinal axis and the first and second magnetic bearings defining a principal axis therebetween, each of the first and second magnetic bearings having at least four magnetic poles with respective magnet coils associated therewith, a voltage and/or current flow through the magnet coils generating magnetic field force vectors to support the rotor for rotation relative to the first and second magnetic bearings, the force vectors under the control of the processing device to selectively position the

longitudinal axis relative to the principal axis, the software causing the processing device to perform the function of:

controlling the force vectors to align the rotor in the first and second magnetic bearings so that the longitudinal axis thereof and the principal axis defined between the first and second magnetic bearings are not axially coincident with one another; and

providing a selected waveform to be impressed on the magnetic field of the first and second magnetic bearings to excite the rotor in response to the selected waveform, the waveform impressed on the rotor at a selected angle relative to a fixed reference coordinate and rotating with the rotor when the rotor is in motion.

30. (new) The software of claim 29, wherein the longitudinal axis is off-set from the principal axis.

31. (new) The software of claim 29, wherein the longitudinal axis is aligned non-parallel to the principal axis.

32. (new) The software of claim 29, wherein the longitudinal axis is aligned non-parallel to the principal axis and defines a pivot point intermediate the ends of the rotor.

33. (new) The software of claim 32, wherein the position of the pivot point along the longitudinal axis is determined as a function of the ratio of the force vectors applied by the first magnetic bearing and the second magnetic bearing.

34. (new) The software of claim 29, wherein the waveform rotates in synchronism with the rotor when the rotor is in motion.

35. (new) The software of claim 29, wherein the waveform is selected from the group comprising sine waveform, sine squared waveform, cosine

waveform, cosine squared waveform, random waveform, square waveform, squared pulse waveform, triangular waveform, single square waveform, single triangular waveform, sawtooth waveform.

36. (new) Software stored in or on a computer-readable medium for causing a software-controlled processing device coupled to first and second magnetic bearings supporting a rotor to control positioning of the rotor in the first and second magnetic bearings, the rotor having a longitudinal axis and the first and second magnetic bearings defining a principal axis therebetween, each of the first and second magnetic bearings having at least four magnetic poles with respective magnet coils associated therewith, a voltage and/or current flow through the magnet coils generating magnetic field force vectors to support the rotor for rotation relative to the first and second magnetic bearings, the force vectors under the control of the processing device to selectively position the longitudinal axis relative to the principal axis, the software causing the processing device to perform the function of:

controlling the force vectors to align the rotor in the first and second magnetic bearings so that the longitudinal axis thereof and the principal axis defined between the first and second magnetic bearings are not axially coincident with one another; and

providing a selected waveform to be impressed on the magnetic field of the first and second magnetic bearings to excite the rotor in response to the selected waveform, the waveform selected from the group comprising sine waveform, sine squared waveform, cosine waveform, cosine squared waveform, random waveform, square waveform, squared pulse waveform, triangular waveform, single square waveform, single triangular waveform, sawtooth waveform.

37. (new) The software of claim 36, wherein the longitudinal axis is offset from the principal axis.

38. (new) The software of claim 36, wherein the longitudinal axis is aligned non-parallel to the principal axis.

39. (new) The software of claim 36, wherein the longitudinal axis is aligned non-parallel to the principal axis and defines a pivot point intermediate the ends of the rotor.

40. (new) The software of claim 39, wherein the position of the pivot point along the longitudinal axis is determined as a function of the ratio of the force vectors applied by the first bearing and the second bearing.